1-1-1965

Test 884: Ford 2000 (Gasoline) 4-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 884—FORD 2000 GASOLINE 4-SPEED

POWER TAKE-OFF PERFORMANCE

	Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours									
*	30.57	1900	2.865	0.570	10.67	192	62	75	28.867
Standard Power Take-off Speed (540 rpm)—One Hour									
	26.35	1484	2.441	0.564	10.79	189	63	75	28.805
VARYING POWER AND FUEL CONSUMPTION—TWO HOURS									
	27.22	1992	2.565	0.573	10.62	188	64	76	.....
	0.00	2099	1.041	.....	.....	178	63	76	.....
	14.02	2050	1.795	0.779	7.81	184	63	76	.....
	30.43	1900	2.870	0.574	10.60	191	64	77	.....
	7.06	2067	1.396	1.203	5.06	180	64	77	.....
	20.77	2027	2.160	0.633	9.61	186	64	76	.....
Av	**16.58**	**2022**	**1.971**	**0.723**	**8.41**	**185**	**64**	**76**	**28.737**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Air wet bulb	Air dry bulb	Barom-eter inches of Mercury
Maximum Available Power—Two Hours—5th Gear (2nd direct)											
27.17	2367	4.30	1901	6.31	2.854	0.639	9.52	195	56	74	28.825
75% of Pull at Maximum Power—Ten Hours—5th Gear (2nd direct)											
22.18	1816	4.58	1987	4.69	2.391	0.656	9.28	189	56	69	28.758
50% of Pull at Maximum Power—Tw Hours—5th Gear (2nd direct)											
15.85	1257	4.73	2015	2.85	1.986	0.762	7.98	192	62	81	28.755

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %		Gal per hr	Lb per hp-hr	Hp-hr per gal	Cool-ing med	Air wet bulb	Air dry bulb	Barom-eter inches of Mercury
MAXIMUM POWER WITH BALLAST												
25.54	4360	2.20	1936	13.75	1st Gear (1st under)	188	54	72	28.840			
26.39	3652	2.71	1900	10.64	2nd Gear (2nd under)	192	54	72	28.840			
27.24	2943	3.47	1900	8.25	3rd Gear (1st direct)	192	54	72	28.840			
27.32	2486	4.12	1902	6.88	4th Gear (3rd under)	192	54	72	28.840			
27.75	2421	4.30	1904	6.62	5th Gear (2nd direct)	193	54	72	28.840			
27.03	1891	5.36	1901	5.20	6th Gear (1st over)	193	56	75	28.830			
27.72	1629	6.38	1900	4.61	7th Gear (3rd direct)	192	56	75	28.830			
26.92	1538	6.56	1898	4.18	8th Gear (2nd over)	190	55	74	28.840			
26.67	1122	8.91	1899	3.18	9th Gear (4th under)	192	55	74	28.840			
25.92	1000	9.72	1902	2.85	10th Gear (3rd over)	192	56	75	28.830			
24.45	668	13.72	1903	1.71	11th Gear (4th direct)	189	56	75	28.830			
MAXIMUM POWER WITHOUT BALLAST												
26.77	2401	4.18	1902	10.32	5th Gear (2nd direct)	193	61	75	28.930			

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—5th Gear (2nd direct)

Pounds pull	2421	2544	2623	2633	2634	2530
Horsepower	27.75	26.38	23.89	20.91	17.90	14.41
Crankshaft speed, rpm	1904	1728	1522	1331	1140	952
Miles per hour	4.30	3.89	3.41	2.98	2.55	2.14
Slip of drivers, %	6.62	6.83	7.24	7.55	7.55	7.14

TIRES, BALLAST and WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi	Two 12.4-28; 4; 14	Two 12.4-28; 4; 12
Ballast	—Liquid	400 lb each	None
	—Cast iron	660 lb each	None
Front Tires	—No., size, ply & psi	Two 5.50-16; 4; 32	Two 5.50-16; 4; 28
Ballast	—Liquid	32 lb each	None
	—Cast iron	30 lb each	None
Height of Drawbar		23½ inches	24½ inches
Static weight	—Rear	4130 lb	2010 lb
	—Front	1710 lb	1585 lb
Total weight with operator		6015 lb	3770 lb

Department of Agricultural Engineering

Dates of Test: April 5 to 21, 1965

Manufacturer: FORD MOTOR COMPANY, Birmingham, Michigan

FUEL, OIL AND TIME: Fuel regular gasoline **Octane No** 85.2 Research 92.3 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.7308 **Weight per gallon** 6.083 lb **Oil** SAE 10W **API service classification** MS, DM **To motor** 1.480 gal **Drained from motor** 1.455 gal **Transmission and final-drive lubricant** SAE 80 EP **Total time engine was operated** 47 hours.

ENGINE Make Ford gasoline **Type** 3 cylinder vertical **Serial No** LG002933-L4 **Crankshaft mounted** lengthwise **Rated rpm** 1900 **Bore and stroke** 4.2″ × 3.8″ **Compression ratio** 8 to 1 **Displacement** 157.95 cu in **Carburetor size** 1¼″ **Ignition system** battery **Cranking system** 12 volt electric **Lubrication** pressure **Air cleaner** dry type with replaceable pleated paper element **Oil filter** full flow replaceable cotton element **Fuel filter** edge type filter in sediment bowl **Muffler** was used **Cooling medium temperature control** thermostat.

CHASSIS type standard **Serial No** C100785 **Tread width** rear 52″ to 76″ front 52″ to 80″ **Wheel base** 75.8″ **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 33.4″ Vertical distance above roadway 25.2″ Horizontal distance from center of rear wheel tread 0″ to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.5, second 3.0, third 3.8, fourth 4.4, fifth 4.6, sixth 5.7, seventh 6.7, eighth 6.9, ninth 9.2, tenth 10.2, eleventh 13.9, twelth 20.9, reverse 2.7, 4.0, 6.0 **Clutch** single plate dry disc operated by foot pedal **Brakes** internal expanding shoe operated by two foot pedals which can be locked **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117″ left 117″ (on concrete surface without brake) right 129″ left 129″ **Turning space diameter** (on concrete surface with brake applied) right 240″ left 240″ (on concrete surface without brake) right 267″ left 267″ **Power take-off** 540 rpm at 1484 engine rpm.

REPAIRS and ADJUSTMENTS No repairs or adjustments.

REMARKS All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

Eleven gears were chosen between stability limit and 15 mph.

This tractor is equipped with the standard 4-speed transmission plus an optional auxiliary over drive-underdrive transmission. Standard PTO speed can be obtained only with the four direct drive gears.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **884.**

L. F. LARSEN
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
J. J. SULEK
D. E. LANE
Board of Tractor Test Engineers

The University of Nebraska Agricultural Experiment Station
E. F. Frolik, Dean; H. H. Kramer, Director, Lincoln, Nebraska

EXPLANATION OF TEST REPORT

GENERAL CONDITIONS

Each tractor is a production model equipped for common usage. Power consuming accessories can be disconnected only when it is convenient for the operator to do so in practice. Additional weight can be added as ballast if the manufacturer regularly supplies it for sale. The static tire loads and the inflation pressures must conform to recommendations in the Tire Standards published by the Society of Automotive Engineers.

PREPARATION FOR PERFORMANCE RUNS

The engine crankcase is drained and refilled with a measured amount of new oil conforming to specifications in the operators manual. The fuel used and the maintenance operations must also conform to the published information delivered with the tractor. The tractor is then limbered-up for 12 hours on drawbar work in accordance with the manufacturer's published recommendations. The manufacturer's representative is present to make appropriate decisions regarding mechanical adjustments.

The tractor is equipped with approximately the amount of added ballast that is used during maximum drawbar tests. The tire tread-bar height must be at least 55% of new tread height prior to the maximum power run.

BELT OR POWER TAKE-OFF PERFORMANCE

Maximum Power and Fuel Consumption. The manufacturer's representaitve makes carburetor, fuel pump, ignition and governor control settings which remain unchanged throughout all subsequent runs. The governor and the manually operated governor control lever is set to provide the high-idle speed specified by the manufacturer for maximum power. Maximum power is measured by connecting the belt pulley or the power take-off to a dynamometer. The dynamometer load is then gradually increased until the engine is operating at the rated speed specified by the manufacturer for maximum power. The corresponding fuel consumption is measured.

Varying Power and Fuel Consumption. Six different horsepower levels are used to show corresponding fuel consumption rates and how the governor causes the engine to react to the following changes in dynamometer load: 85% of the dynamometer torque at maximum power; minimum dynamometer torque, ½ the 85% torque; maximum power, ¼ and ¾ of the 85% torque. Since a tractor is generally subjected to varying loads the average of the results in this test serve well for predicting the fuel consumption of a tractor in general usage.

DRAWBAR PERFORMANCE

All engine adjustments are the same as those used in the belt or power take-off tests. If the manufacturer specifies a different rated crankshaft speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified by the manufacturer in the operating instructions.

Varying Power and Fuel Consumption With Ballast. The varying power runs are made to show the effect of speed-control devices (engine, governor, automatic transmission, etc.) on horsepower, speed and fuel consumption. These runs are made around the entire test course which has two 180 degree turns with a minimum radius of 50 feet. The drawbar pull is set at 3 different levels as follows: (1) as near to the pull at maximum power as possible and still have the tractor maintain the travel speed at maximum horsepower on the straight sections of the test course; (2) 75% of the pull at maximum power; and (3) 50% of the pull at maximum power. Prior to 1958, fuel consumption data (10 hour test) were shown only for the pull obtained at maximum power for tractors having torque converters and at 75% of the pull obtained at maximum power for gear-type tractors.

Maximum Power with Ballast. Maximum power is measured on straight level sections of the test course. Data are shown for not more than 12 different gears or travel speeds. Some gears or travel speeds may be omitted because of high slippage of the traction members or because the travel speed may exceed the safe-limit for the test course. The maximum safe speed for the Nebraska Test Course has been set at 15 miles per hour. The slippage limits have been set at 15% and 7% for pneumatic tires and steel tracks or lugs, respectively. Higher slippage gives widely varying results.

Maximum Power Without Ballast. All added ballast is removed from the tractor. The maximum drawbar power of the tractor is determined by the same procedure used for getting maximum power with ballast. The gear (or travel speed) is the same as that used in the 10-hour test.

Varying Power and Travel Speed with Ballast. Travel speeds corresponding to drawbar pulls beyond the maximum power range are obtained to show the "lugging ability" of the tractor. The run starts with the pull at maximum power; then additional drawbar pull is applied to cause decreasing speeds. The run is ended by one of three conditions: (1) maximum pull is obtained, (2) the maximum slippage limit is reached, or (3) some other operating limit is reached.

For additional information about the **Nebraska Tractor Tests** write to the **Department of Agricultural Engineering, University of Nebraska, Lincoln, Nebraska.**

Ford 2000 4-Speed Gasoline